Weird Number • Mark Senn • last updated on 2022-03-20 at 22:09-04

Problem Statement

From The Weekly Challenge - 156 Task #2: Weird Number retrieved on 2022-03-15 at 19:35-04:

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You are given number, `$n > 0`.

Write a script to find out if the given number is a `Weird Number`.

According to Wikipedia, it is defined as:

> The sum of the proper divisors (divisors including 1 but not itself) of the number is greater than the number, but no subset of those divisors sums to the number itself.

Example 1:
```
Input:  $n = 12
Output:  0
Since the proper divisors of 12 are 1, 2, 3, 4, and 6, which sum to 16;
but 2 + 4 + 6 = 12.
```

Example 2:
```
Input:  $n = 70
Output :  1
As the proper divisors of 70 are 1, 2, 5, 7, 10, 14, and 35; these sum to
74, but no subset of these sums to 70.
```

Raku Solution

```
# Use version 6.d of the Raku language.
use v6.d;

for (12, 70) -> $n
{
    "Input: \$n = $n".say;

    # The proper divisors (divisors including 1 but not the number itself).
    my @divisors = (1..^$n).grep({$n %% $_});

    # The sum of the proper divisors.
    my $divisors-sum = @divisors.sum;

    # All subsets of the proper divisors.
    my @divisors-subset = @divisors.combinations(1..*);

    # The sum of every divisor subset.
    my @divisors-subset-sum = @divisors-subset.map({.sum});

    # A weird number has
    #     o  $divisor-sum greater than $n
```

```
    #      o  no @divisors-subset-sum is equal to $n
    ($divisors-sum > $n  &&  $n ~~ none(@divisors-subset-sum))
    ??  'Output: 1'.say
    !!  'Output: 0'.say;
}
```